REMARKS

This is in full and timely response the Office Action dated November 28, 2007.

Claims 17-36 are currently pending in this application, with claim 17 being independent.

No new matter has been added.

Reexamination in light of the following remarks is respectfully requested.

Rejections under 35 U.S.C. §103

Page 2 of the Final Office Action includes a rejection of claims 17-27 and 36 under 35 U.S.C. §103 as allegedly being unpatentable over Japanese Publication No. 10-209467 to Hisao et al (Hisao).

Claims 17-27 and 36 - Claims 18-27 and 36 are dependent upon claim 17. Claim 17 is drawn to a thin film semiconductor device *wherein a thickness of said gate insulating film is greater than a thickness of said gate electrode.*

The Final Office Action asserts that *the upper layer 5a and the lower layer 5b together provides a combined gate thickness of about 100-500 nm* (Final Office Action at page 2).

Additionally, the Final Office Action additional asserts that Hisao discloses that *the gate insulating film 4 has a thickness in the range of 100-200 nm which allows for a lower limit range value of 100 nm* (Final Office Action at page 2).

As such, the Final Office Action appears to argue that Hisao teaches a thin film semiconductor device *wherein a thickness of the gate insulating film 4 (100 nm) is greater than a thickness of the gate electrode 5a,5b (slightly less than 100 nm)* (Final Office Action at page 2).

In this regard, an invention is "obvious-to-try" where the prior art gives either *no indication* of which parameters are critical or *no direction* as to which of many possible choices is likely to be successful. *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 10 USPQ2d 1843, 1845 (Fed. Cir. 1989).

Nevertheless, the Final Office Action concludes, *without providing any supporting evidence*, that it would have been obvious to a person of ordinary skill in the art at the time the invention was made to select the gate electrode 5 having a combined gate thickness slightly less than 100 nm and to select the gate insulating file 4 having a thickness of 100 nm to reduce the size of the device (Final Office Action at page 2).

**** In response, the Final Office Action **fails** to show a teaching within Hisao **for requiring** the alleged gate insulating film 4 to be of a thickness greater than that of the gate electrode 5.*

Here, Hisao *does not contain a sufficient teaching* of how to obtain the desired result, or that the claimed result would be obtained if certain directions were pursued.

This failure of some teaching within Hisao is especially apparent when the skilled artisan could reasonably conclude from the ranges presented within the Final Office Action that the alleged gate insulating film 4 could also be of a thickness that is *less than* that of the gate electrode 5.

"Obvious-to-try" is not the standard under §103. *In re O'Farrell*, 7 USPQ2d 1673, 1680 (Fed. Cir. 1988).

The Final Office Action asserts that *it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art* (Final Office Action at pages 2-3).

In response, the Final Office Action appears to argue that it would always be obvious for one of ordinary skill in the art to try varying every parameter of a system in order to optimize the

effectiveness of the system even if there is no evidence in the record that the prior art recognized that particular parameter affected the result. However, obvious to try is not the standard of 35 USC 103. *In re Antonie*, 195 USPQ 6, 8 (CCPA 1977).

As a rule, "one way for a patent applicant to rebut a *prima facie* case of obviousness is to make a showing of 'unexpected results,' i.e., to show that the claimed invention exhibits some superior property or advantage that a person of ordinary skill in the relevant art would have found surprising or unexpected." *In re Geisler*, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997).

"When an applicant seeks to overcome a prima facie case of obviousness by showing *improved performance* in a range that is within or overlaps with a range disclosed in the prior art, the applicant must 'show that the [claimed] range is critical, generally by showing that the claimed range achieves unexpected results relative to the prior art range.'" *In re Geisler*, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997).

"All evidence of nonobviousness must be considered when assessing patentability." *Richardson-Vicks Inc. v. The Upjohn Co.*, 44 USPQ2d 1181, 1186 (Fed. Cir. 1997).

"Consistent with the rule that *all evidence* of nonobviousness must be considered when assessing patentability, the PTO must consider comparative data in the specification in determining whether the claimed invention provides unexpected results." *In re Soni*, 34 USPQ2d 1684, 1687 (Fed. Cir. 1995). See also, *In re Wright*, 6 USPQ2d 1959, 1962 (Fed. Cir. 1988).

Paragraph [0034] of U.S. Patent Application Publication No. 2001/0011726, the publication document for the present application, provides that:

> [0034] As the characteristic matter of this invention, the gate electrodes are comprised of metallic materials, whose thickness Tm is established with less than 100 nm. As the metallic materials, for instance, metals with high melting point can be adopted, selective from Mo (molybdenum), Ta (tantalum), Cr (chromium) or the like. According to this embodiment, Mo with thickness Tm of, for instance, 90 nm is

used. The gate insulating film 4 covering the gate electrodes 5 is comprised of deposited film of, for instance, silicon dioxide (SiO_2), whose thickness Ti is established to be ***greater than*** the thickness Tm of the gate electrodes 5. By making the thickness Tm of the gate electrodes 5 to be less than 100 nm, thermal capacity can be reduced and the difference in thermal condition on the gate electrodes 5 and the insulating substrate 1 is made small, thereby trying to enlarge a process margin occurred by the laser anneal treatment. In this case, *if the thickness Ti of the gate insulating film 4 located between the gate electrodes 5 and the semiconductor thin film 2 is too thin, an effect of reducing the thickness Tm of the gate electrodes 5 is offset*. Therefore, *the thickness Ti of the gate insulating film 4 is made to become* ***greater than*** *the thickness Tm of the gate electrodes 5*. For instance, when the thickness Tm of the gate electrodes 5 is 90 nm, the thickness Ti of the gate insulating film is made to be 110 nm. The semiconductor thin film 2 deposited on the gate insulating film 4 is comprised of polycrystalline silicon crystallized by an irradiation of a laser beam. Its thickness is, for instance, 40 nm.

"An applicant relying on comparative tests to rebut a prima facie case of obviousness must compare his claimed invention to the closest prior art." *In re De Blauwe*, 222 USPQ 191, 196 (Fed. Cir. 1984).

Here, the Final Office Action cites Hisao as the closest cited prior art.

*** *However, the Final Office Action fails to show within Hisao a criticality in the relationship between the thickness of the gate insulating film 4 and the thickness of the gate electrode 5a,5b.*

Thus, the Final Office Action ***fails*** *to show unexpectedly superior results within Hisao produced by the thickness of the gate insulating film 4 being greater than the thickness of the gate electrode 5a,5b.*

- ***Thus, the Office Action fails to show Hisao as teaching the presence of a thin film semiconductor device wherein a thickness of said gate insulating film is greater than a thickness of said gate electrode.***

Page 4 of the Final Office Action includes a rejection of claims 28-32 under 35 U.S.C. §103 as allegedly being unpatentable over Japanese Publication No. 10-209467 to Hisao et al (Hisao) in view of U.S. Patent No. 5,912,506 to Colgan et al. (Colgan).

Hisao - As shown hereinabove, the Office Action ***fails*** to show Hisao as teaching the presence of a thin film semiconductor device wherein a thickness of said gate insulating film is greater than a thickness of said gate electrode.

Colgan - Colgan arguably the presence of a second metal layer 5 and a third metal layer 7 (Colgan at Figure 7).

**** However, Colgan fails to show the presence of a gate insulating film.*

- ***Thus, Colgan fails to disclose, teach, or suggest the presence of a thin film semiconductor device wherein a thickness of said gate insulating film is greater than a thickness of said gate electrode.***

Page 5 of the Final Office Action includes a rejection of claims 31-35 under 35 U.S.C. §103 as allegedly being unpatentable over Japanese Publication No. 10-209467 to Hisao et al (Hisao) in view of U.S. Patent No. 6,235,561 to Seiki et al. (Seiki).

Hisao - As shown hereinabove, the Office Action ***fails*** to show Hisao as teaching the presence of a thin film semiconductor device wherein a thickness of said gate insulating film is greater than a thickness of said gate electrode.

Seiki - Seiki arguably the presence of conductive layers 111, 113, 115 and gate insulating film 121 (Seiki at Figure 3).

- ***However, Seiki fails to disclose, teach, or suggest the presence of a thin film semiconductor device wherein a thickness of said gate insulating film is greater than a thickness of said gate electrode.***

Withdrawal of these rejections and allowance of the claims is respectfully requested.

Conclusion

For the foregoing reasons, all the claims now pending in the present application are allowable, and the present application is in condition for allowance.

Applicants reserve the right to set forth further arguments supporting the patentability of their claims, including the separate patentability of the dependent claims not explicitly addressed herein, in future papers.

There is no concession as to the veracity of Official Notice, if taken in any Office Action. An affidavit or document should be provided in support of any Official Notice taken. 37 CFR 1.104(d)(2), MPEP § 2144.03. See also, *Ex parte Natale*, 11 USPQ2d 1222, 1227-1228 (Bd. Pat. App. & Int. 1989)(failure to provide any objective evidence to support the challenged use of Official Notice constitutes clear and reversible error).

Accordingly, favorable reexamination and reconsideration of the application in light of the remarks is courteously solicited.

Extensions of time

Please treat any concurrent or future reply, requiring a petition for an extension of time under 37 C.F.R. §1.136, as incorporating a petition for extension of time for the appropriate length of time.

Fees

If any fee is required or any overpayment made, the Commissioner is hereby authorized to charge the fee or credit the overpayment to Deposit Account # 18-0013.

If the Examiner has any comments or suggestions that could place this application in even better form, the Examiner is requested to telephone Brian K. Dutton, Reg. No. 47,255, at 202-955-8753.

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Respectfully submitted,

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